



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2021-1193; Special Conditions No. 25-798-SC]

Special Conditions: Dassault Aviation Falcon Model 6X Airplane; Design Speed

Definition

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Dassault Aviation (Dassault) Model Falcon 6X Airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is a high speed protection system that limits nose-down pilot authority at speeds above V_C/M_C . The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on Dassault on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by Docket No. FAA-2021-1193 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in title 14, Code of Federal Regulations (14 CFR) 11.35, the FAA will post all comments received without change to <http://www.regulations.gov/>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about these special conditions.

Confidential Business Information: Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to these special conditions contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to these special conditions, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of these special conditions. Send submissions containing CBI to Todd Martin, Materials and Structural Properties Section, AIR-621, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft

Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3210; e-mail Todd.Martin@faa.gov. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for these special conditions.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Todd Martin, Materials and Structural Properties Section, AIR-621, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3210; e-mail Todd.Martin@faa.gov.

SUPPLEMENTARY INFORMATION: The substance of these special conditions has been published in the *Federal Register* for public comment in several prior instances with no substantive comments received. Therefore, the FAA finds, pursuant to § 11.38(b), that new comments are unlikely, and notice and comment prior to this publication are unnecessary.

Comments Invited

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments. The FAA may change these special conditions based on the comments received.

Background

On July 1, 2012, Dassault Aviation applied for a type certificate for its new Model Falcon 5X airplane. However, Dassault has decided not to release an airplane under the model designation Falcon 5X, instead choosing to change that model designation to Falcon 6X.

In February of 2018, due to engine supplier issues, Dassault extended the type certificate application date for its Model Falcon 5X airplane under new Model Falcon 6X. This airplane is a twin-engine business jet with seating for 19 passengers and a maximum takeoff weight of 77,460 pounds.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.17, Dassault must show that the Model Falcon 6X airplane meets the applicable provisions of part 25, as amended by amendments 25-1 through 25-146.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Dassault Model Falcon 6X airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Dassault Model Falcon 6X airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Dassault Model Falcon 6X airplane will incorporate the following novel or unusual design feature:

The airplane is equipped with a high speed protection system that limits nose-down pilot authority at speeds above V_C/M_C , and prevents the airplane from actually performing the maneuver required under 14 CFR 25.335(b)(1).

Discussion

Section 25.335(b)(1) is an analytical envelope condition, adopted initially in part 4b of the Civil Air Regulations, to provide an acceptable speed margin between design cruise speed and design dive speed. The design dive speed impacts flutter clearance design speeds and airframe design loads. While the initial condition for the upset specified in the rule is 1g level flight, protection is afforded for other inadvertent overspeed conditions. Section 25.335(b)(1) is intended as a conservative enveloping condition for potential overspeed conditions, including non-symmetric ones.

To establish that potential overspeed conditions are enveloped, the applicant should demonstrate that any reduced speed margin, based on the high speed protection system on the Dassault Model Falcon 6X, will not be exceeded in inadvertent, or gust induced, upsets resulting in initiation of the dive from non-symmetric attitudes; or that the flight-control laws protect the airplane from getting into non-symmetric upset conditions. The proposed special conditions identify various symmetric and non-symmetric maneuvers to ensure that an appropriate design dive speed, V_D/M_D , is established.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Dassault Model Falcon 6X airplane. Should Dassault apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only a certain novel or unusual design feature on one model of airplane. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Dassault Aviation Model Falcon 6X Airplane.

Design Speed Definition

- (a) In lieu of compliance with 14 CFR 25.335(b)(1), if the flight-control system includes functions that act automatically to initiate recovery before the end of the 20 second period specified in § 25.335(b)(1), V_D/M_D must be determined from the greater of the speeds resulting from conditions (a) and (b) below. The speed

increase occurring in these maneuvers may be calculated, if reliable or conservative aerodynamic data are used.

(1) From an initial condition of stabilized flight at V_C/M_C , the airplane is upset so as to take up a new flight path 7.5 degrees below the initial path. The pilot implements a control application to try to maintain this new flight path up to full authority. Twenty seconds after initiating the upset, manual recovery is made at a load factor of 1.5 g (0.5 acceleration increment), or such greater load factor the system automatically applies with the pilot's pitch control neutral. Power, as specified in § 25.175(b)(1)(iv), is assumed until the pilot initiates a recovery, at which time power reduction and the use of pilot-controlled drag devices may be used.

(2) From a speed below V_C/M_C , with power to maintain stabilized level flight at this speed, the airplane is upset so as to accelerate through V_C/M_C at a flight path 15 degrees below the initial path (or at the steepest nose-down attitude that the system will permit with full control authority if less than 15 degrees). The pilot's controls may be in the neutral position after reaching V_C/M_C and before recovery is initiated. Three seconds after a high-speed warning system annunciation, the pilot may initiate recovery by applying a load of 1.5g (0.5 acceleration increment), or such greater load factor that is automatically applied by the system with the pilot's pitch control neutral. Power may be reduced simultaneously. All other means of decelerating the airplane, the use of which is authorized up to the highest speed reached in the maneuver, may be used. The interval between successive pilot actions must not be less than one second.

(b) The applicant must also demonstrate that the speed margin, established as above, will not be exceeded in inadvertent, or gust induced, upsets resulting in initiation

of the dive from non-symmetric attitudes, unless the flight-control laws protect the airplane from getting into non-symmetric upset conditions. The upset maneuvers described in Advisory Circular 25-7D, “Flight Test Guide For Certification of Transport Category Airplanes,” paragraphs 10.2.3.3.1 and 10.2.3.3.3, paragraphs c.(3)(a) and (c) may be used to comply with this requirement.

- (c) Any failure of the high-speed protection system that would result in an airspeed exceeding those determined by conditions (a) and (b), above, must have a probability of occurrence of less than $1\text{E-}5$ per flight hour.
- (d) Failures of the system must be annunciated to the pilots. Flight manual instructions must be provided that reduce the maximum operating speeds, V_{MO}/M_{MO} . The operating speed must be reduced to a value that maintains a speed margin between V_{MO}/M_{MO} and V_D/M_D that is consistent with showing compliance with § 25.335(b) without the benefit of the high-speed protection system.
- (e) Dispatch of the airplane with the high-speed protection system inoperative could be allowed under an approved minimum equipment listing that would require flight manual instructions to indicate reduced maximum operating speeds, as described in condition (d), above. In addition, the cockpit display of the reduced operating speeds, and the overspeed warning for exceeding those speeds, must be equivalent to that of the normal airplane with the high-speed protection system

operative. It must also be shown that no additional hazards are introduced with the high-speed protection system inoperative.

Issued in Kansas City, Missouri, on July 20, 2022.

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